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RESEARCH ON TRANSLATIONS OF TESTS

Psychometric Evaluation of the Multidimensional Schizotypy Scale–Brief (MSS-B) in Spanish and Mexican Samples: A Cross-Cultural Study

Karen Fagián-Núñez¹, Pilar Torrecilla¹, Valeria Lavín¹, Jacqueline Nonweiler¹, Tecelli Domínguez²,
Tamara Sheinbaum², Thomas R. Kwapil³, and Neus Barrantes-Vidal^{1, 4}

¹ Departament de Psicologia Clínica i de la Salut, Facultat de Psicologia, Universitat Autònoma de Barcelona

² Dirección de Investigaciones Epidemiológicas y Psicosociales, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Mexico City, Mexico

³ Department of Psychology, University of Illinois Urbana-Champaign

⁴ Centro de Investigación Médica en Red de Salud Mental, Instituto de Salud Carlos III, Madrid, Spain

This study investigates the (a) underlying factor structure and (b) convergent and discriminant validity of the Multidimensional Schizotypy Scale–Brief (MSS-B), a novel measure for assessing positive, negative, and disorganized schizotypy in nonclinically ascertained samples of Mexican and Spanish adults. Two independent studies were conducted. Study 1 involved two independent samples of Castilian Spanish speakers from Spain (Sample 1: $n = 1,049$; $M_{\text{age}} = 23.0$, 76% female; Sample 2: $n = 542$; $M_{\text{age}} = 26.5$, 83% female), whereas Study 2 assessed a Mexican sample ($n = 1,437$; $M_{\text{age}} = 30.5$, 80.1% female). The factor structure was examined through confirmatory factor analysis. Convergent and discriminant validity were examined by comparing MSS-B scores with other measures, such as the Schizotypal Personality Questionnaire–Brief, the Wisconsin Schizotypy Scales–Short Forms, the Neuroticism Extraversion Openness–Five-Factor Inventory of Personality, and the Prodromal Questionnaire–Brief. As hypothesized, the three-factor structure demonstrated the best fit in both studies. MSS-B scores showed adequate convergent and discriminant validity with the Schizotypal Personality Questionnaire–Brief, Wisconsin Schizotypy Scales–Short Forms, and Prodromal Questionnaire–Brief. Associations with personality traits from the Neuroticism Extraversion Openness–Five-Factor Inventory partially supported our hypothesis. MSS-B scores demonstrated good reliability and validity in nonclinical Spanish-speaking samples from Spain and Mexico, thus allowing the identification of risk for psychosis-spectrum psychopathology and enabling replication in schizotypy research across languages and cultures. Characterizing the heterogeneity of schizotypy dimensions in individuals is critical for identifying developmental pathways that lead to either risk or resilience for psychosis and adequately tailoring treatment targets and strategies.

Public Significance Statement

This study shows that Spanish versions of the Multidimensional Schizotypy Scale–Brief exhibited good reliability and validity in nonclinical samples from Spain and Mexico. This allows for the identification of signs of risk for psychosis and profiles of the specific components (i.e., cognitive-perceptual abnormalities, disorganized affect and/or cognition, reduced motivation affect) that characterize individuals, thus providing valuable information for the development of personalized intervention programs and their adaptation to different sociocultural contexts.

Keywords: psychosis, schizophrenia spectrum, schizotypy measurement, schizotypy scales

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Karen Fagián-Núñez  <https://orcid.org/0009-0006-5591-5277>

Pilar Torrecilla  <https://orcid.org/0000-0003-2017-6014>

Valeria Lavín  <https://orcid.org/0000-0001-9954-8524>

Jacqueline Nonweiler  <https://orcid.org/0000-0003-1851-7844>

Tecelli Domínguez  <https://orcid.org/0000-0003-4369-8288>

Tamara Sheinbaum  <https://orcid.org/0000-0002-2268-7697>

Thomas R. Kwapil  <https://orcid.org/0000-0003-1116-5954>

Neus Barrantes-Vidal  <https://orcid.org/0000-0002-8671-1238>

Data, code, and materials are available upon reasonable request. Study

hypotheses, methods, and data analytic procedures were preregistered on the Open Science Framework (<https://osf.io/wha26>; Fagián-Núñez et al., 2024). Part of the findings were presented as a poster at the 2024 Congress of the Schizophrenia International Research Society.

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continued

Schizotypy encompasses a spectrum of psychosis-related features and symptoms expressed along a wide continuum ranging from nonpathological traits to schizophrenia (Barrantes-Vidal & Kwapil, 2023; Kwapil & Barrantes-Vidal, 2015; van Os & Linscott, 2012). This conceptualization suggests that underlying etiological, developmental, and phenomenological processes are shared between sub-clinical and clinical manifestations of psychosis (Kwapil & Barrantes-Vidal, 2015) and that differences along the schizotypy continuum are best understood as a matter of degree, not type. Thus, schizotypy provides a valuable unifying framework for understanding exacerbating and mitigating factors that contribute to vulnerability for psychosis-spectrum disorders (Barrantes-Vidal et al., 2015; Raine, 2006).

Research supports schizotypy as a heterogeneous construct that is best captured using a multidimensional structure (Barrantes-Vidal & Kwapil, 2023; Kerns, 2006; Kwapil, Gross, Silvia, et al., 2018). Although the number of dimensions that comprise schizotypy is not fully established, strong evidence supports the existence of three dimensions: positive, negative, and disorganized (e.g., American Psychiatric Association, 2013; Kwapil & Barrantes-Vidal, 2015; Vollema & van den Bosch, 1995). Positive schizotypy is characterized by odd beliefs and perceptual disturbances, whereas negative (or deficit) schizotypy includes flattened affect, alogia, anergia, anhedonia, avolition, and lack of interest in others and the world (Kemp et al., 2021; Kwapil, Gross, Burgin, et al., 2018). The disorganized dimension refers to disturbances in the capacity to organize and express thoughts, speech, affect, and behavior (Kemp et al., 2018; Kwapil & Barrantes-Vidal, 2015). Disorganization has been the least studied of the dimensions, and measures of disorganized schizotypy often fail to adequately assess the construct.

Numerous questionnaire measures have been developed to assess schizotypy (see reviews in Barrantes-Vidal & Kwapil, 2023; Kwapil & Chun, 2015). The Schizotypal Personality Questionnaire (Raine, 1991) and its abbreviated version, the Schizotypal Personality Questionnaire–Brief (SPQ-B; Raine & Benishay, 1995), are self-report measures originally designed to assess schizotypal personality disorder features according to the diagnostic criteria outlined in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1987). The SPQ-B taps three underlying factors: cognitive-perceptual, interpersonal, and disorganized. The Wisconsin Schizotypy Scales (WSS; Chapman et al., 1976, 1978; Eckblad & Chapman, 1983; Eckblad et al., 1982), and their short versions, the Wisconsin Schizotypy Scales–Short Forms (WSS-SF; Winterstein et al., 2011), consist of four independent scales that capture positive and

negative schizotypy: Magical Ideation, Perceptual Aberration, Physical Anhedonia, and Revised Social Anhedonia.

While these scales are generally cost-effective and noninvasive and allow for the assessment of a wide number of individuals, they have a number of significant drawbacks. They were not developed to assess current conceptualizations of multidimensional schizotypy, their items often have outdated or culturally biased wording, they present inconsistent factor structures (e.g., Gross et al., 2014), and they have psychometric shortcomings, including differential item functioning (Barrantes-Vidal & Kwapil, 2023; Kwapil & Barrantes-Vidal, 2015; Kwapil, Gross, Burgin, et al., 2018; Kwapil, Gross, Silvia, et al., 2018). Thus, the Multidimensional Schizotypy Scale (MSS; Kwapil, Gross, Silvia, et al., 2018) and its abbreviated version, the Multidimensional Schizotypy Scale–Brief (MSS-B; Gross, Kwapil, Raulin, et al., 2018), were developed to capture positive, negative, and disorganized schizotypy. These scales followed DeVellis's (2012) scale development recommendations, including classical test theory, differential item functioning, and item response theory (Kwapil, Gross, Silvia, et al., 2018).

In English-speaking samples, MSS-B scores, like those on the full-scale MSS, demonstrated good reliability (e.g., internal consistency and test–retest reliability), good item and model fit, good test information functions, minimal item bias concerning gender and race/ethnicity, and optimal validity across distinct and large samples (e.g., Gross, Kwapil, Burgin, et al., 2018; Gross, Kwapil, Raulin, et al., 2018; Kemp, Gross, Kwapil, 2020; Li et al., 2020). Furthermore, scores on the MSS-B Positive, Negative, and Disorganized Schizotypy subscales showed good concordance with subscale scores on the full-scale MSS. Numerous questionnaire (e.g., Kemp, Kaczorowski, et al., 2022), interview (e.g., Kemp, Bathery, et al., 2020), ambulatory assessment (e.g., Kwapil et al., 2020), and laboratory (e.g., Sahakyan et al., 2019) studies have supported the three-factor conceptualization of schizotypy and the validity of the MSS and MSS-B subscale scores.

Unlike other schizotypy measures that have been successfully adapted to Spanish (e.g., Fonseca-Pedrero et al., 2009, 2016; Ros-Morente et al., 2010), the MSS-B has not yet been validated in the Spanish language. Given that 7.5% of the world's population is proficient in Spanish (≈ 600 million speakers) and the fact that it is the second native language globally (Instituto Cervantes, 2023), the adaptation of the MSS-B across different variants of the Spanish language is a necessary next step, not only to conduct research in Spanish but also to allow for cross-cultural adaptations and replication

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Correspondence concerning this article should be addressed to Neus Barrantes-Vidal, Departament de Psicologia Clínica i de la Salut, Facultat de Psicologia, Universitat Autònoma de Barcelona, Edifici B, 08193 Bellaterra (Cerdanyola del Valles), Barcelona, Spain. Email: neus.barrantes@uab.cat

within schizotypy research and to ensure its applicability and accuracy in diverse linguistic contexts.

Goals and Hypotheses

The primary goal was to adapt and validate two Spanish versions of the MSS-B (Gross, Kwapil, Burgin, et al., 2018) for use in Castilian and Latin American Spanish speakers across two studies conducted with nonclinically ascertained adult samples. Study 1 was conducted with Castilian Spanish speakers (Spain), and Study 2 was carried out in a Mexican population. Both studies aimed to (a) examine the psychometric properties of the MSS-B subscale scores, (b) evaluate the underlying factor structure, and (c) assess convergent and discriminant validity of the MSS-B subscale scores by examining their associations with measures of schizotypy and normal personality. Drawing on prior research (Gross, Kwapil, Raulin, et al., 2018; Kwapil, Gross, Silvia, et al., 2018), we hypothesized that a three-factor structure would provide the best fit for the data.

In Study 1 (Spain), building on the original study of the MSS-B by Gross, Kwapil, Burgin, et al. (2018), we assessed convergent and discriminant validity with the SPQ-B and the WSS-SF and tested for discriminant validity with the Neuroticism Extraversion Openness–Five-Factor Inventory of Personality (NEO-FFI; McCrae & Costa, 2010). Following previous studies (Gross, Kwapil, Burgin, et al., 2018; Kwapil, Gross, Burgin, et al., 2018), convergent validity was hypothesized to be indicated by evidence that scores on each MSS-B subscale would show the strongest association with its corresponding SPQ-B factor scores. Thus, MSS-B Positive, Negative, and Disorganized subscale scores would be most highly associated with SPQ-B cognitive-perceptual, interpersonal, and disorganized scores, respectively. Nevertheless, given that the SPQ-B interpersonal factor captures social discomfort and disinterest but simultaneously taps other features that are not typically thought to be a part of negative schizotypy (i.e., neuroticism, social anxiety, and paranoia), only moderate associations were expected between the SPQ-B interpersonal factor and MSS-B Negative Schizotypy subscale scores. It was also hypothesized that the association between the disorganized SPQ-B factor scores and the MSS-B Disorganized Schizotypy subscale scores would be moderate, given that certain items within the disorganized SPQ-B factor assess oddness or eccentricity, which may have some overlap with positive schizotypy rather than disorganization (Gross et al., 2014). A strong association was expected between the Positive MSS-B subscale and the SPQ-B cognitive-perceptual factor scores.

The WSS factors have demonstrated close correspondence to the MSS in assessing positive and negative schizotypy in daily life (Kwapil et al., 2020). Therefore, we expected that positive and negative MSS-B scores would be positively associated with their counterparts in the WSS-SF. As an indicator of discriminant validity, we anticipated weak associations between the MSS-B Positive and WSS-SF Negative Schizotypy subscale scores, as well as the SPQ-B interpersonal factor scores. In addition, we predicted low associations between the MSS-B Negative Schizotypy subscale scores and both the WSS-SF positive and SPQ-B cognitive-perceptual scores.

Based on previous findings (Gross et al., 2014; Gross, Kwapil, Burgin, et al., 2018; Kwapil, Gross, Burgin, et al., 2018), positive associations were expected between responses on the MSS-B Positive Schizotypy subscale and both neuroticism and openness to experience, whereas negative associations were anticipated between

the MSS-B Positive Schizotypy subscale scores with agreeableness and conscientiousness. Furthermore, we hypothesized that scores on the MSS-B Negative Schizotypy subscale would be negatively associated with extraversion, openness, and agreeableness. Finally, we expected that responses on the MSS-B Disorganized Schizotypy subscale would be positively associated with neuroticism and be inversely associated with conscientiousness.

In Study 2 (Mexico), convergent validity was examined with the Prodromal Questionnaire–Brief (PQ-B; Loewy et al., 2011), which primarily captures positive prodromal or at-risk symptoms, alongside the level of distress related to each symptom. Building on earlier research (Pfarr et al., 2023), we hypothesized that the PQ-B symptom score would exhibit a strong and moderate association with the MSS-B Positive and Disorganized Schizotypy subscales, respectively. Conversely, a weak association was expected between the PQ-B symptom reports and Negative MSS-B subscale (i.e., discriminant validity). Based on prior research that has established a link between disorganized schizotypy and increased stress (Kemp et al., 2024; Rónai et al., 2025) and emotional dysregulation (L. M. Hernández et al., 2023; Kemp et al., 2023) in everyday life, we hypothesized that the Disorganized Schizotypy subscale would be associated with elevated levels of stress related to the prodromal symptoms assessed by the PQ-B scores.

Study 1

Method

Design, Participants, and Procedure

This cross-sectional study used two independent samples. Sample 1 consisted of 1,049 nonclinical participants ($M_{\text{age}} = 23.0$, $SD = 6.0$, range = 18–56, 95% ranged between 18 and 35, 76% female) recruited at two universities in Barcelona using advertisements posted through the university communication channels and by placing posters within campus facilities. Sample 2 involved 542 participants from the Spanish general population ($M_{\text{age}} = 26.5$, $SD = 8.39$, range = 18–59, 83% female), born or currently residing in Spain, who were recruited through social media, as well as by advertisements and flyers.

The inclusion criteria were (a) proficiency in Spanish and (b) age between 18 and 59 years old. Individuals aged 60 and above were excluded to maintain the focus on younger subjects who are at or close to the highest risk period for psychosis and to avoid potential cognitive impairments associated with aging that could particularly affect the accuracy of the Disorganization subscale (Gross, Kwapil, Burgin, et al., 2018; Gross, Kwapil, Raulin, et al., 2018; Kwapil, Gross, Burgin, et al., 2018; Kwapil, Gross, Silvia, et al., 2018).

With permission from the original authors, the translation of the MSS-B (Supplemental Table S1) was conducted following the International Test Commission Guidelines (A. Hernández et al., 2020). Ethical approval was obtained from the research ethics committee of the Universitat Autònoma de Barcelona (Ref. 5426).

After giving informed consent, participants were asked to complete an online survey using Qualtrics (2020). Initially, a total of $n = 1,088$ participants from Sample 1 and $n = 608$ participants from Sample 2 completed the battery of measures. However, $n = 5$ and $n = 34$ participants from Sample 1 and $n = 15$ and $n = 51$ participants from Sample 2 were excluded for not meeting the age inclusion criteria and

for responding carelessly, respectively. Sample 1 completed the MSS-B and the Chapman's Infrequency Scale (Chapman & Chapman, 1983), whereas Sample 2 completed the MSS-B, the Attentive Responding Scale (Maniaci & Rogge, 2014), and the Chapman's Infrequency Scale. Of the 542 targeted participants from Sample 2, 402 completed the WSS-SF, 378 the SPQ-B, and 207 the NEO-FFI.

Materials

Multidimensional Schizotypy Scale–Brief (Gross, Kwapil, Raulin, et al., 2018). The MSS-B contains 38 true–false items that assess positive (13 items), negative (13 items), and disorganized (12 items) schizotypy. Higher scores denote higher levels of schizotypic traits. The reliability of the Spanish version is analyzed in the current article.

Schizotypal Personality Questionnaire–Brief (Raine & Benishay, 1995). The SPQ-B is a self-report measure comprised of 22 true–false items that capture three factors: cognitive-perceptual, interpersonal, and disorganized.

Wisconsin Schizotypy Scales–Short Forms (Winterstein et al., 2011). The WSS-SF consists of a set of four independent scales designed to assess positive and negative schizotypy dimensions. Specifically, the Magical Ideation Scale (Eckblad & Chapman, 1983) and the Perceptual Aberration Scale (Chapman et al., 1980) capture positive schizotypy, whereas the Revised Social Anhedonia Scale (Eckblad et al., 1982) and Physical Anhedonia Scale (Chapman et al., 1976) assess negative schizotypy. Each scale has 15 true–false items.

NEO–Five-Factor Inventory (McCrae & Costa, 2010). The NEO-FFI consists of 60 items scored on a 5-point Likert scale assessing the personality traits of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness.

Two additional measures were administered to identify potential careless responding: the Chapman's Infrequency Scale (Chapman & Chapman, 1983), which comprises 13 items, and the Attentive Responding Scale (Maniaci & Rogge, 2014), which consisted of six infrequency and 12 inconsistent items (forming six item-pairs). The items from both measures were randomly interspersed within the overall questionnaire. Participants who endorsed more than two items on the Infrequency Scale or exceeded the cutoff score for the Attentive Responding Scale were excluded from analyses.

Data Analyses

A confirmatory factor analysis (CFA) with the MSS-B items to examine the factor structure was conducted in Sample 1. Weighted least squares mean and variance estimation was used due to the categorical nature of MSS-B items. The sample size was considered sufficient for conducting CFA as it exceeded the recommended participant-to-observed variable ratio of 20:1 (Koran, 2020) and the minimum requirement of 200 participants (Barrett, 2007). Skewness and kurtosis were calculated to assess the normality of the distribution. Following Hair et al.'s (2010) criteria, acceptable values of skewness fall between -2 and $+2$, and kurtosis is appropriate from a range of -7 to $+7$.

Different candidate models were assessed utilizing several fit indices, including comparative fit index (CFI; Bentler, 1990), Tucker–Lewis index (TLI; Tucker & Lewis, 1973), root-mean-square error of approximation (RMSEA; Browne & Cudeck, 1993), and standardized

root-mean-square residual (SRMR; Pavlov et al., 2021). Following criteria by Brown (2015) and Schreiber et al. (2006), CFI and TLI $\geq .9$, RMSEA $\leq .08$, and SRMR $\leq .10$ indicate good model fit, whereas CFI and TLI $\geq .95$, RMSEA $\leq .06$, and SRMR $\leq .08$ denote excellent goodness of fit.

Given that the literature has emphasized the existence of either two (e.g., Kendler et al., 1991; Lewine et al., 1983) or three schizotypy factors (e.g., Arndt et al., 1991; Wuthrich & Bates, 2006), three different candidate models of factor structures were analyzed. Model 1 (M1) corresponded to the one-factor structure or the unidimensional model. Model 2 (M2) represented a two-factor structure, where disorganized manifestations are not distinct from positive features, denoting positive/disorganized signs in one factor and negative schizotypy in the other. Finally, Model 3 (M3) referred to the three-factor structure: positive, negative, and disorganized. Given that the models were nested, statistical comparisons among the three models were conducted using chi-square difference tests and the difference in degrees of freedom between them.

To evaluate internal consistency, Cronbach's (1951) α coefficient was calculated. Internal consistency values when individual items were removed were also evaluated. To provide evidence of convergent and discriminant validity, bivariate correlations of MSS-B scores with scores of SPQ-B, WSS-SF, and NEO-FFI dimensions were conducted using data from Sample 2. Note that the scores of the WSS-SF positive and negative dimensions were calculated based on the factor loadings derived from the CFA conducted by Gross et al. (2015). Finally, a series of linear regressions were conducted. At the first step, we simultaneously entered the three MSS-B subscales' responses as predictors to assess their unique prediction of each of the SPQ-B, WSS-SF, and NEO-FFI scores. At the second step, we reran the analyses entering each MSS-B subscale's score as a predictor over and above the other two MSS-B subscales scores. The standardized regression coefficient (β), change in R^2 , and effect size (f^2) were reported in order to examine the unique contribution of each score in the linear regressions. According to Cohen (1992), f^2 values above .02 are small, above .15 are medium, and above .35 are large effect sizes. Linear regression analyses were computed using bootstrap procedures with 2,000 bootstrap samples. For comparison purposes, we also provided the bivariate correlations of each of the MSS-B subscales' scores with the outcome measures.

Except for the CFA, the entire statistical analysis was carried out using the Statistical Package for Social Sciences (IBM Corp, 2019). Mplus 7 Statistical Package (Muthén & Muthén, 2017) was employed to conduct CFA and estimate model fit indices.

Transparency and Openness

This article complies with Journal Article Reporting Standards. Data, code, and materials are available upon reasonable request. Proposals for the use of data and requests for access should be directed to the corresponding author. Study hypotheses, methods, and data analytic procedures were preregistered on the Open Science Framework (<https://osf.io/wha26>; Fagián-Núñez et al., 2024). This study uses data from the Barcelona Longitudinal Investigation of Sensitivity and Schizotypy 2. Except for the chi-squared difference tests, which were added post hoc and not included in the preregistered analytic plan, all the analyses followed the preregistered protocol, and we reported the results of all the analyses computed.

Results

Descriptive statistics for responses on the MSS-B, SPQ-B, WSS-SF, and NEO-FFI factors/dimensions are reported in Supplemental Table S2.

Confirmatory Factor Analysis

Consistent with Kwapil and Barrantes-Vidal's (2015) model and our initial hypothesis, the three-factor structure (M3) demonstrated the best fit: CFI, TLI, and SRMR exhibited good fit, and RMSEA denoted excellent goodness of fit (Table 1). The one-factor solution (M1) demonstrated the worst fit, with CFI, TLI, and SRMR indices not meeting the established criteria for goodness of fit. Fit indices of the two-factor model (M2) failed to meet the criteria for goodness of fit. Changes in chi-square values and degrees of freedom across the three nested models indicated that M3 provided a significantly better fit than both M1 and M2 (Table 1). M2 showed a significantly improved fit compared to M1.

Table 2 shows the standardized factor loadings of the three-factor CFA. All items presented significant ($p < .01$) and favorable factor loadings (above .30) according to P. Kline (1994).

Reliability of the MSS-B Subscales

Cronbach's α for all MSS-B subscale scores indicated acceptable reliability for the positive and negative dimensions and good or excellent for the disorganized dimension in both samples (Supplemental Table S2). For all items, the α of each subscale decreased or was maintained when items were removed (Table 2).

Associations of MSS-B and SPQ-B Factors and WSS-SF Dimensions

Bivariate correlations between MSS-B, SPQ-B, and WSS-SF scores are presented in Supplemental Table S3. Providing evidence for our hypotheses regarding convergent validity, scores on the MSS-B positive dimension and SPQ-B cognitive-perceptual factor, the MSS-B negative dimension and SPQ-B interpersonal factor, and the MSS-B disorganized dimension and the SPQ-B disorganized factor were all strongly correlated. As expected, positive and negative MSS-B scores were strongly associated with the WSS-SF positive and negative scores, respectively.

Supporting the hypotheses for discriminant validity, the MSS-B positive scores were weakly associated with the SPQ-B interpersonal factor scores. No association was found between MSS-B positive and WSS-SF negative schizotypy scores. The MSS-B negative dimension scores were also weakly associated with the scores on the SPQ-B cognitive-perceptual factor and the WSS-SF positive dimension (Supplemental Table S3).

Further supporting our hypotheses, linear regressions indicated that each MSS-B subscale score best predicted its corresponding SPQ-B factor score over and above the other dimensions (Table 3). A medium effect size was only observed when predicting the SPQ-B interpersonal scores by negative MSS-B scores, whereas large effect sizes were obtained when predicting SPQ-B cognitive-perceptual and disorganized scores by the MSS-B Positive and Disorganized subscale scores, respectively. As hypothesized, the MSS-B positive and negative dimension scores best predicted their WSS-SF counterparts, showing large effect sizes (Table 3).

Associations of MSS-B and the Five-Factor Model Domains

As expected, at the bivariate level, scores on the MSS-B positive schizotypy presented medium associations with neuroticism and openness to experience scores, as well as a weak correlation with decreased conscientiousness. However, contrary to our expectations, no association emerged with agreeableness. The MSS-B negative schizotypy demonstrated a moderate association with decreased extraversion and low agreeableness scores, but against our anticipation, negative schizotypy scores were not correlated with openness to experience. Scores on the MSS-B disorganized schizotypy presented a strong positive association with neuroticism and a large inverse correlation with conscientiousness scores (Supplemental Table S3).

As hypothesized, linear regressions showed that positive schizotypy scores no longer predicted neuroticism, openness to experience, or low conscientiousness over and above the effects of the other two schizotypy dimension scores. Instead, scores on disorganized schizotypy accounted for unique variance in neuroticism and diminished conscientiousness, yielding medium and large effect sizes, respectively. The MSS-B disorganized dimension scores also presented a small inverse association with extraversion. As hypothesized, the MSS-B negative scores were significantly associated with lower

Table 1

Confirmatory Factor Analyses of the Multidimensional Schizotypy Scale-Brief in Spanish and Mexican Samples

Sample	Goodness of fit indices resulting from confirmatory factor analyses					χ^2 difference test	
	Model	CFI	TLI	RMSEA	SRMR	Model	$\Delta\chi^2$ (Δdf)
Sample 1 of Study 1 (Spain; $n = 1,049$)	M1	.76	.75	.07	.14	M2 versus M1	187.98 (1)*
	M2	.84	.83	.06	.12	M3 versus M2	257.06 (2)*
	M3	.91	.91	.04	.09	M3 versus M1	453.98 (3)*
Study 2 (Mexico; $n = 1,437$)	M1	.81	.81	.07	.13	M2 versus M1	333.77 (1)*
	M2	.90	.89	.06	.10	M3 versus M2	223.83 (2)*
	M3	.93	.93	.05	.08	M3 versus M1	602.81 (3)*

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residuals; $\Delta\chi^2$ = change in chi-square; Δdf = change in degrees of freedom; M1 = one-factor model; M2 = two-factor model; M3 = three-factor model.

* $p < .001$.

Table 2

Factor Loadings Resulting From the Confirmatory Factor Analyses for the Multidimensional Schizotypy Scale–Brief Subscale Scores and Estimation of Cronbach's α if Item Is Deleted

Item	Sample 1 ($n = 1,049$) of Study 1 (Spain)				Study 2 (Mexico; $n = 1,437$)			
	Positive factor	Negative factor	Disorganized factor	α if item deleted	Positive factor	Negative factor	Disorganized factor	α if item deleted
1	.53**			.74	.61**			.79
2	.40**			.75	.61**			.80
3	.66**			.75	.76**			.80
4	.59**			.74	.69**			.80
5	.63**			.74	.75**			.79
6	.62**			.73	.69**			.79
7	.57**			.74	.67**			.79
8	.65**			.75	.67**			.80
9	.62**			.75	.81**			.79
10	.75**			.74	.76**			.79
11	.55**			.75	.70**			.80
12	.58**			.74	.63**			.79
13	.74**			.74	.85**			.79
14		.53**		.69		.40**		.78
15		.67**		.68		.76**		.76
16		.52**		.69		.66**		.77
17		.74**		.69		.88**		.75
18		.77**		.69		.81**		.75
19		.49**		.70		.52**		.76
20		.75**		.68		.41**		.76
21		.53**		.69		.25**		.77
22		.30**		.70		.15**		.78
23		.37**		.71		.50**		.77
24		.69**		.67		.66**		.75
25		.68**		.70		.92**		.75
26		.69**		.69		.62**		.76
27			.88**	.87			.91**	.88
28			.85**	.87			.88**	.88
29			.87**	.87			.93**	.88
30			.76**	.87			.86**	.89
31			.70**	.88			.80**	.89
32			.67**	.88			.73**	.89
33			.75**	.88			.77**	.89
34			.85**	.87			.82**	.88
35			.82**	.87			.86**	.88
36			.72**	.87			.71**	.89
37			.79**	.87			.81**	.89
38			.73**	.88			.78**	.89

** $p < .01$.

levels of extraversion, agreeableness, and openness to experience, exhibiting large, medium, and small effect sizes, respectively (Table 3).

Study 2

Method

Design, Participants, and Procedure

Participants were recruited as part of an ongoing research project examining risk and protective factors for subclinical psychopathology in the Mexican general population (Domínguez-Martínez et al., 2023). The sample was comprised of Spanish-speaking individuals between 15 and 45 years of age, born or currently residing in Mexico, who voluntarily agreed to participate in an online survey administered via Qualtrics (2020). Of a sample of 1,568 participants from the larger study, $n = 131$ were excluded from the present report due to elevated infrequency scores ($n = 5$), not meeting the age inclusion criteria ($n = 114$), or having a diagnosis of a psychotic spectrum disorder or a

psychosis-related hospitalization ($n = 12$). Thus, valid data were obtained from 1,437 individuals from the general population ($M_{\text{age}} = 30.49$, $SD = 8.0$, range = 18–45, 80.1% female). Recruitment was primarily conducted through personal and institutional (educational and health institutions) social media platforms in Mexico. The study was approved by the research ethics committee of the Ramón de la Fuente Muñiz National Institute of Psychiatry (CEI/C/019/2021).

Materials

Multidimensional Schizotypy Scale–Brief (Gross, Kwapil, Raulin, et al., 2018). Participants completed the Spanish version of the MSS-B (Supplemental Table S1) for use in Latin America. Following best practices for translation and adaptation of instruments (A. Hernández et al., 2020), the lexicon of the Spanish version used in Study 1 was adapted in some of the items to improve flow and facilitate comprehension, especially in some phrases that are not used colloquially in the Latin American context (e.g., Castilian

Table 3*Linear Regressions Examining Prediction by the MSS-B Subscale Scores*

Measure	MSS-B positive			MSS-B negative			MSS-B disorganized			Total R^2
	β	ΔR^2	f^2	β	ΔR^2	f^2	β	ΔR^2	f^2	
Sample 2 ($n = 542$) of Study 1 (Spain)										
SPQ-B ($n = 378$)										
Cognitive-perceptual factor	.705**	.380	.959	.071*	.004	.001	.136**	.013	.033	.604
Interpersonal factor	.098*	.007	.013	.449**	.173	.284	.299**	.065	.107	.390
Disorganized factor	.165**	.021	.039	.210**	.038	.071	.513**	.190	.357	.467
WSS-SF ($n = 502$)										
Positive dimension	.710**	.388	.970	.096*	.008	.020	.116**	.010	.025	.600
Negative dimension	-.053	.002	.004	.595**	.310	.551	.201**	.029	.052	.437
NEO-FFI ($n = 207$)										
Neuroticism	.126	.015	.021	.065	.004	.005	.430**	.162	.225	.281
Extraversion	.190*	.028	.043	-.530**	.240	.371	-.218*	.034	.053	.355
Openness	.157	.027	.030	-.170*	.035	.037	.048	.002	.003	.075
Agreeableness	-.109	.010	.012	-.409**	.152	.180	.100	.008	.009	.157
Conscientiousness	.086	.006	.008	.050	.002	.003	-.614**	.277	.395	.302
Study 2 (Mexico; $n = 1,437$)										
PQ-B										
Symptoms	.494**	.182	.522	.067**	.004	.011	.409**	.113	.325	.652
Distress	.457**	.156	.431	.057**	.003	.008	.440**	.131	.362	.638

Note. Bootstrapping procedures (2,000 samples) were employed. Medium effect sizes (f^2) are in bold, and large effect sizes are in bold and italics (Cohen, 1992). Each row represents a separate regression analysis in which each of the three MSS-B factors was entered simultaneously as predictors of each of the SPQ-B, WSS-SF, NEO-FFI, and PQ-B factor scores. MSS-B = Multidimensional Schizotypy Scale-Brief; SPQ-B = Schizotypal Personality Questionnaire-Brief; WSS-SF = Wisconsin Schizotypy Scales-Short Forms; NEO-FFI = Neuroticism Extraversion Openness-Five-Factor Inventory; PQ-B = Prodromal Questionnaire-Brief.

* $p < .05$. ** $p < .01$.

Spanish: “Mis pensamientos y comportamientos parecen aleatorios y desfocalizados” vs. Latin American Spanish: “Mis pensamientos y comportamientos parecen aleatorios y poco centrados”). These modifications were undertaken with careful consideration of the lexicon and cultural differences of the target population. Neglecting these aspects could result in an adapted instrument that lacks equivalence across linguistic and cultural groups, thereby increasing the risk of misinterpretation and erroneous conclusions (Coskun Benlidayi & Gupta, 2024).

Prodromal Questionnaire-Brief (Fonseca-Pedrero et al., 2016; Loewy et al., 2011). The PQ-B contains 21 dichotomous items (yes/no) tapping early signs of psychosis, providing (a) frequency of symptoms, along with (b) distress level associated with the endorsed items.

Additionally, six items from the Chapman’s Infrequency Scale (Chapman & Chapman, 1983) were included within the questionnaire to detect careless responses. Participants who endorsed more than two items were excluded from analyses.

Data Analyses

Data analysis procedures were conducted as in Study 1 (Spain). Three different candidate models were assessed using CFA with weighted least squares mean and variance estimation. Change in chi-square and change in degrees of freedom across the three nested models were evaluated. Once the best fitting factor structure was identified for Spanish and Mexican samples, factor invariance across the two groups was tested (see the Supplemental Materials). Internal consistency was examined using Cronbach’s α coefficient. Evidence of convergent and discriminant validity was established

through bivariate correlations and multiple linear regressions between MSS-B dimension scores and PQ-B scores (see detailed method in Study 1).

Transparency and Openness

Transparency and openness are in alignment with the procedures outlined in Study 1. All the analyses followed the preregistered analytic plan, with the exception of the invariance analyses (see the Supplemental Materials), which were incorporated at a later stage. This study uses data from a larger research project (Domínguez-Martínez et al., 2023).

Results

Descriptive statistics of the MSS-B dimensions and PQ-B are reported in Supplemental Table S2.

Confirmatory Factor Analysis

Aligned with our initial hypothesis, the three-factor model (M3) presented the best fit, with CFI and TLI denoting good fit and SRMR and RMSEA indicating excellent goodness of fit (Table 1). The unidimensional model (M1) exhibited the worst fit. Whereas the RMSEA of the two-factor solution (M2) presented excellent goodness of fit and the CFI and SRMR suggested a good fit, the TLI did not meet the criteria for acceptable fit. Comparisons of changes in chi-square statistics and degrees of freedom among the three nested models revealed that M3 fits the data significantly better than both M1 and M2 and that M2 exhibited an improved fit compared to M1 (Table 1).

Regarding factor loadings resulting from the CFA, most items presented significant loadings with suitable values above .30. However, there were two exceptions: Items 21 (“If given the choice, I would much rather be with another person than alone”) and 22 (“Most of the time I feel a desire to be connected with other people”) from the negative dimension, both presenting factor loadings below .25 (Table 2).

Reliability of the MSS-B

Cronbach’s α values for the MSS-B subscales demonstrated acceptable internal consistency for the negative, good for the positive, and excellent for the disorganized dimension scores (Supplemental Table S2). Furthermore, the α for each subscale either decreased or remained stable when items were removed (Table 2).

Associations of MSS-B Dimensions and PQ-B

Supporting the hypotheses related to convergent validity, Supplemental Table S3 shows that MSS-B positive and disorganized scores displayed strong associations with PQ-B symptom scores at a bivariate level. Notably, scores on the disorganized dimension demonstrated a particularly strong association with PQ-B scores, which partially opposes our initial hypothesis of a moderate relationship. Linear regressions showed that positive schizotypy scores significantly predicted levels of PQ-B symptoms and distress, indicated by large effect sizes (Table 3). Reinforcing our hypotheses, disorganized schizotypy was also associated with PQ-B symptoms and distress scores, indexing medium and large effect sizes, respectively. Contrary to our expectations for discriminant validity, negative schizotypy scores were associated with PQ-B scores, although this relationship was characterized by a small effect size (Table 3).

General Discussion

The present study aimed to further examine the underlying factor structure of the MSS-B and to assess the convergent and discriminant validity of its scores in Latin American and Spanish nonclinical populations. Overall, the results showed that (a) scores from the Spanish translations of the MSS-B exhibited good psychometric properties in both samples, (b) the factor structure underlying the MSS-B scores was consistent across both groups, and (c) the MSS-B scores of the Spanish and Mexican adaptations demonstrated convergent and discriminant validity based upon associations with external measures of schizotypy and personality.

The three-factor model presented the best fit compared to the other models in both the Spanish and Mexican samples, and fit indices were all closely comparable with those obtained in the Hungarian version of the MSS-B (Rónai et al., 2025). Note that we did not test factor models with more than three factors, given that Christensen et al. (2019) found support for the three-factor model of the MSS-B, but not a four-factor model. Reliability of scores from all the MSS-B subscales on the Spanish and Mexican samples was comparable with previous studies (e.g., Gross, Kwapil, Burgin, et al., 2018; Gross, Kwapil, Raulin, et al., 2018). Two items of the negative dimension in the Mexican sample showed relatively low factor loadings. These conceptually align with the factor they belong to and did not negatively influence the reliability when they were removed,

suggesting that they play a relevant role in maintaining the internal consistency of the dimension scores. Although the data were collected following the COVID-19 pandemic lockdown, these items may tap normative responses to the pandemic, as well as negative schizotypic characteristics. Note that our results were consistent across samples of different cultural contexts, which is of particular importance considering current concerns regarding the major replication crisis in psychology research (e.g., Wiggins & Christopher, 2019).

Regarding convergent and discriminant validity in Study 1 (Spain, Sample 2), scores on each MSS-B subscale showed the highest association with its corresponding SPQ-B factor scores, which aligns with previous findings (Gross, Kwapil, Burgin, et al., 2018; Kwapil, Gross, Burgin, et al., 2018). Nonetheless, associations did not reflect a complete overlap, which could be explained by the fact that the SPQ-B was designed to assess schizotypal personality disorder traits, but not specifically multidimensional schizotypy. Schizotypal personality can be understood as a manifestation of schizotypy, but the factor structure of the Schizotypal Personality Questionnaire was derived by factor analysis and was not developed to map onto current multidimensional models of schizotypy (Barrantes-Vidal & Kwapil, 2023; Gross et al., 2014). The strongest association was for the MSS-B positive dimension scores with the SPQ-B cognitive-perceptual factor scores, supporting the notion that MSS-B and SPQ-B effectively capture similar aspects of positive schizotypy. As mentioned earlier, the fact that the SPQ-B interpersonal factor maps other domains not specific to negative schizotypy (e.g., anxiety or personal discomfort) explains the moderate associations found between scores on the SPQ-B interpersonal factor and the MSS-B negative dimension in the Spanish sample. These results are consistent with previous findings using the WSS (e.g., Gross et al., 2014), which indicates that the SPQ-B interpersonal factor and MSS-B negative dimension measure constructs that overlap yet remain fundamentally distinct. The SPQ-B disorganized factor scores exhibited the strongest association with the disorganized scores of the MSS-B but were also modestly associated with negative and positive MSS-B dimension scores, which suggests that cognitive disturbances and functional impairment are also implicitly present to some extent in both negative and positive schizotypy and might also indicate that disorganization indexes severity to some extent (Gross, Kwapil, Burgin, et al., 2018; Kwapil, Gross, Burgin, et al., 2018).

With respect to the MSS-B and WSS-SF, we found significant associations between positive and negative dimension scores of both questionnaires, indicating that the MSS-B positive and negative schizotypy dimensions perform comparably with their counterparts of the WSS-SF in the Spanish sample. While scores on the positive schizotypy dimensions exhibited a strong correlation, the association between the negative schizotypy dimension scores showed a moderate overlap. This may be explained by previous CFA studies showing that the WSS-SF Social Anhedonia subscale scores loaded not only in the negative factor but also in the positive one (Kwapil et al., 2008), which is also consistent with previous literature showing associations between social anhedonia and positive psychoticlike features (Diaz et al., 2003; Kwapil, 1998; Kwapil et al., 2008; Pope & Kwapil, 2000). Additionally, the MSS-B positive dimension scores did not show any overlap with the WSS-SF negative scores, nor did the MSS-B negative with the WSS-SF positive dimension scores, confirming that positive and negative schizotypy are distinct phenotypes probably reflecting different etiological influences.

In terms of personality, neuroticism and low conscientiousness scores were primarily related to disorganized schizotypy dimension scores, which aligns with previous research emphasizing the robust link of disorganization with neuroticism (e.g., L. M. Hernández et al., 2023; Kwapil, Gross, Burgin, et al., 2018) and decreased conscientiousness (e.g., Gross, Kwapil, Burgin, et al., 2018; Kwapil, Gross, Burgin, et al., 2018). However, this contrasts with studies using the WSS (e.g., Gross et al., 2015; Kwapil et al., 2008), which have found that positive schizotypy scores are associated with these traits. Nevertheless, this is consistent with recent studies that have suggested that the bivariate associations of positive schizotypy scores with negative affect, anxiety, and neuroticism are better accounted for by disorganized schizotypy (L. M. Hernández et al., 2023; Kemp et al., 2018; Kwapil et al., 2020). The relationship with conscientiousness scores likely stems from cognitive and behavioral alterations that are characteristic of disorganization, which undermine key attributes of conscientiousness, such as planning, discipline, competence, order, and deliberation (Kwapil, Gross, Burgin, et al., 2018). Overall, findings in the Spanish sample (Study 1) indicate that using a three-dimensional model of schizotypy changes the pattern of associations compared to a bidimensional structure, in which disorganization may have obscured the psychopathological and personality correlates of positive schizotypy. This is consistent with studies examining schizotypy in daily life showing that the associations of positive, negative, and disorganized schizotypy scores change depending on the inclusion of disorganization as a predictor (e.g., Kwapil et al., 2020). Finally, the association of disorganization scores with decreased extraversion also aligns with Gross, Kwapil, Burgin, et al. (2018) and may indicate that cognitive abnormalities can lead to an impairment of social skills and result in fewer positive social experiences, thus reinforcing a preference for solitude and further diminishing extraversion.

Contrary to our expectations, positive schizotypy scores also failed to account for unique variance in diminished agreeableness and openness to experience. This is particularly surprising given the well-established pattern of associations between these constructs (e.g., Kemp, Raulin, et al., 2022). Nevertheless, although the five-factor model has been widely used in psychology, it has also faced criticism (see McAdams, 1992; McCrae, 2020). Thus, other personality models may be better suited to capture the nuances of personality traits in relation to schizotypy. For example, the Alternative Model of Personality Disorder (Krueger et al., 2012), included in the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (American Psychiatric Association, 2013), proposes five major domains that represent the pathological variants of the five-factor model dimensions: detachment (vs. extraversion), antagonism (vs. agreeableness), disinhibition (vs. conscientiousness), psychoticism (vs. lucidity), and negative affectivity (vs. emotional stability). These domains, along with their facets, are evaluated with the Personality Inventory for *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (PID-5; Krueger et al., 2012). Indeed, a recent study using the PID-5 (Kemp, Kaczorowski, et al., 2022) found that the MSS scores presented notably different patterns of associations with PID-5 domains and facets: Positive schizotypy scores were associated with psychoticism; negative schizotypy scores were associated with detachment; and disorganized schizotypy scores were related to negative affect, distractibility (disinhibition), and eccentricity (psychoticism) facets. Finally, negative schizotypy scores exhibited a pattern of associations with personality traits that aligns with those of the original MSS (e.g., Kwapil, Gross,

Burgin, et al., 2018) and MSS-B (Gross, Kwapil, Burgin, et al., 2018) studies.

Concerning the validity of the MSS-B in the Mexican sample (Study 2), positive schizotypy was strongly associated with PQ-B symptoms. Consistent with prior research demonstrating that disorganized schizotypy is robustly linked to affective dysregulation (L. M. Hernández et al., 2023) and stress reactivity of psychoticlike experiences both in laboratory settings (Grant & Henning, 2020) and in everyday life (Kemp et al., 2024; Rónai et al., 2025), scores on the disorganization dimension were associated with ratings of distress associated with symptoms. This may be attributed to the cognitive and affective disturbances that are characteristic of disorganized schizotypy (Kerns, 2006), which may be exacerbating the individual's sensitivity to environmental stress, thus leading to greater emotional instability and psychological distress. We expected that positive and disorganized MSS-B scores would be associated to a lesser extent with the PQ-B distress and symptoms scores, respectively. This expectation may have been confounded by the high correlation between scores on symptoms and distress ($r = .96$), which may be making it difficult to disentangle these constructs. This high degree of overlap has also been observed in prior research (e.g., Hanssen et al., 2003) using other measures like the Community Assessment of Psychic Experiences (Stefanis et al., 2002), which also taps both psychotic experiences and distress levels. The composition of the sample, which primarily includes individuals from the general population, rather than clinical participants, could explain this important overlap. In nonclinical individuals, prodromal features may be particularly stressful, making it difficult to distinguish between the presence of symptoms and the associated stress levels. Indeed, previous studies demonstrated that individuals with less schizotypal traits tend to perceive psychoticlike experiences as more distressing, frightening, or disruptive compared to those with higher schizotypal traits (E. Kline et al., 2012). Furthermore, the observed overlap may also have been driven by two items of the PQ-B that seem to assess disorganized communication rather than positive symptoms. In fact, the strength of the correlation between scores on the MSS-B disorganized dimension and on Items 6 ("Do you have difficulty getting your point across, because you ramble or go off the track a lot when you talk?") and 21 ("Do people sometimes find it hard to understand what you are saying?") of the PQ-B was moderate ($r = .49$) and strong ($r = .51$), respectively, in the Mexican sample.

Our Spanish validation supports the use of the MSS-B in Spanish-speaking individuals, especially in those from Mexico and Central and South America. This is particularly important for improving early recognition of signs of psychosis risk and providing valuable information for the development of early psychosis programs adapted to the sociocultural contexts in Latin American countries, where research on this field and preventive efforts are still very scarce (Aceituno et al., 2021). Further, it will open the door to study the multidimensionality of schizotypy and its differential correlates in a diverse number of Spanish-speaking populations. Using psychometrically valid measures such as the MSS or the MSS-B that effectively capture schizotypy dimensions enhances early detection and identification of at-risk individuals and facilitates the identification of comprehensive schizotypy profiles that have been associated with different levels of clinical risk (Barrantes-Vidal et al., 2020). For example, Barrantes-Vidal et al. (2010) showed that isolated higher levels of positive schizotypy are generally associated with lower risk and impairment compared to the combination of high positive

as well as high negative schizotypy. Hence, recognizing the multidimensional nature of schizotypy is essential for mapping different developmental pathways that lead to either risk or resilience for psychosis (Debbané & Barrantes-Vidal, 2015). This dimensional mapping should aid clinicians in designing and adapting prevention and intervention methods more effectively, especially for individuals who exhibit high-risk traits across multiple schizotypy dimensions.

Strengths, Limitations, and Constraints on Generality

This study presents notable strengths. Research in nonclinical samples facilitates the understanding of the expression and etiology of psychosis-spectrum disorders without the confounding effects of factors associated with clinical status, such as symptom severity, comorbidity, medication, and hospitalization (Barrantes-Vidal et al., 2015), having the potential to uncover even more pronounced effects when applied to clinical contexts. To align with the study's cross-cultural validation requirements, all participants were either born in or currently residing in Spain or Mexico. Consequently, the findings are likely more representative of individuals from Spanish and Mexican cultural backgrounds than those from other ethnic or cultural groups. However, since Spanish is spoken in diverse cultural contexts, developing two specific versions of the measure for Spain and Latin America enhances the tool's applicability and improves the accuracy of research across various regions while enabling cross-cultural replication and comparisons. A major limitation is the overrepresentation of women (>75%) in both studies, which may affect the generalizability of our conclusions. It is a common phenomenon that women participate more frequently in research studies, which may be due to gender differences in the decision to participate in clinical studies and respond to online surveys (e.g., Becker, 2022; Lobato et al., 2014), with women generally being more collaborative and willing to participate. Another limitation of this study is its cross-sectional design and the exclusive reliance on self-report measures. Some evidence suggests that scores for complex constructs such as schizotypy are conflated in self-report measures (e.g., Schultze-Lutter et al., 2014); nevertheless, despite concerns about the validity and reliability of self-reported data, especially when assessing schizotypy and psychosis, research indicates that alternative methods (e.g., clinical interviews) are not necessarily more accurate for assessing psychoticlike experiences (Kelleher et al., 2011; Linscott & van Os, 2013). Moreover, self-reports may be especially effective in capturing psychopathological traits and behaviors that are highly stigmatized or socially unacceptable (Jones & Miller, 2012; Waszczuk et al., 2023).

Conclusions

The MSS-B scores provided evidence for the reliability and validity of the measure, allowing the assessment of the multidimensional nature of schizotypy in both Latin American and Castilian nonclinical Spanish populations. The three-factor structure of schizotypy was supported in both cultures. This measure enables the identification of risk for psychosis-spectrum psychopathology and facilitates replication in schizotypy research beyond Anglo-Saxon countries. Its brevity and content coverage make it well-suited for screening large populations and for integration into broader study protocols in diverse

cultural contexts. Overall, this research provides further evidence supporting the multidimensionality of schizotypy. This approach enhances the statistical power, precision, and conceptual clarity of research (Barrantes-Vidal & Kwapil, 2023), which may be obscured when schizotypy and schizophrenia are treated as unitary constructs (e.g., Kemp et al., 2021; Sahakyan et al., 2019). This framework is likely to be beneficial for developing prevention and intervention programs, which are currently contentious due to our restricted ability to precisely identify those at risk for such disorders (Kwapil et al., 2008).

References

- Aceituno, D., Mena, C., Vera, N., Gonzalez-Valderrama, A., Gadelha, A., Diniz, E., Crossley, N., Pennington, M., & Prina, M. (2021). Implementation of early psychosis services in Latin America: A scoping review. *Early Intervention in Psychiatry*, 15(5), 1104–1114. <https://doi.org/10.1111/eip.13060>
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders: DSM-III-Revised* (3rd ed.). American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). American Psychiatric Publishing. <https://doi.org/10.1176/appi.books.9780890425596>
- Arndt, S., Alliger, R. J., & Andreasen, N. C. (1991). The distinction of positive and negative symptoms. The failure of a two-dimensional model. *The British Journal of Psychiatry*, 158(3), 317–322. <https://doi.org/10.1192/bjp.158.3.317>
- Barrantes-Vidal, N., Grant, P., & Kwapil, T. R. (2015). The role of schizotypy in the study of the etiology of schizophrenia spectrum disorders. *Schizophrenia Bulletin*, 41(Suppl. 2), S408–S416. <https://doi.org/10.1093/schbul/sbu191>
- Barrantes-Vidal, N., & Kwapil, T. R. (2023). Conceptualization and assessment of multidimensional schizotypy. In S. Cheli & P. H. Lysaker (Eds.), *A dimensional approach to schizotypy: Conceptualization and treatment* (pp. 81–95). Springer Nature. https://doi.org/10.1007/978-3-031-41788-7_6
- Barrantes-Vidal, N., Lewandowski, K. E., & Kwapil, T. R. (2010). Psychopathology, social adjustment and personality correlates of schizotypy clusters in a large nonclinical sample. *Schizophrenia Research*, 122(1–3), 219–225. <https://doi.org/10.1016/j.schres.2010.01.006>
- Barrantes-Vidal, N., Racioppi, A., & Kwapil, T. R. (2020). Schizotypy, schizotypal personality, and psychosis risk. In A. D. Thompson & M. R. Broome (Eds.), *Risk factors for psychosis* (pp. 81–99). Elsevier Academic Press. <https://doi.org/10.1016/B978-0-12-813201-2.00005-3>
- Barrett, P. (2007). Structural equation modelling: Adjudging model fit. *Personality and Individual Differences*, 42(5), 815–824. <https://doi.org/10.1016/j.paid.2006.09.018>
- Becker, R. (2022). Gender and survey participation: An event history analysis of the gender effects of survey participation in a probability-based multi-wave panel study with a sequential mixed-mode design. *Methods, Data, Analyses*, 16(1), 3–32. <https://doi.org/10.12758/mda.2021.08>
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2), 238–246. <https://doi.org/10.1037/0033-2909.107.2.238>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). Guilford Press.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Sage Publications.
- Chapman, L. J., & Chapman, J. P. (1983). *Infrequency scale for personality measures*. Unpublished scale available from T. R. Kwapil, UIUC.

- Chapman, L. J., Chapman, J. P., & Raulin, M. L. (1976). Scales for physical and social anhedonia. *Journal of Abnormal Psychology*, 85(4), 374–382. <https://doi.org/10.1037/0021-843X.85.4.374>
- Chapman, L. J., Chapman, J. P., & Raulin, M. L. (1978). Body-image aberration in schizophrenia. *Journal of Abnormal Psychology*, 87(4), 399–407. <https://doi.org/10.1037/0021-843X.87.4.399>
- Chapman, L. J., Edell, W. S., & Chapman, J. P. (1980). Physical anhedonia, perceptual aberration, and psychosis proneness. *Schizophrenia Bulletin*, 6(4), 639–653. <https://doi.org/10.1093/schbul/6.4.639>
- Christensen, A. P., Gross, G. M., Golino, H. F., Silvia, P. J., & Kwapil, T. R. (2019). Exploratory graph analysis of the Multidimensional Schizotypy Scale. *Schizophrenia Research*, 206, 43–51. <https://doi.org/10.1016/j.schres.2018.12.018>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Coskun Benliday, I., & Gupta, L. (2024). Translation and cross-cultural adaptation: A critical step in multi-national survey studies. *Journal of Korean Medical Science*, 39(49), Article e336. <https://doi.org/10.3346/jkms.2024.39.e336>
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297–334. <https://doi.org/10.1007/BF02310555>
- Debbané, M., & Barrantes-Vidal, N. (2015). Schizotypy from a developmental perspective. *Schizophrenia Bulletin*, 41(Suppl. 2), S386–S395. <https://doi.org/10.1093/schbul/sbu175>
- DeVellis, R. F. (2012). *Scale development: Theory and applications* (3rd ed.). Sage Publications.
- Diaz, M. A., Dickerson, L. A., & Kwapil, T. R. (2003). A two-year follow-up assessment of schizotypic young adults. *Schizophrenia Research*, 60(1), 167–168. [https://doi.org/10.1016/S0920-9964\(03\)81029-0](https://doi.org/10.1016/S0920-9964(03)81029-0)
- Domínguez-Martínez, T., Sheinbaum, T., Fresán, A., Nieto, L., López, S. R., Robles, R., Lara, M. D. C., de la Fuente-Sandoval, C., Barrantes-Vidal, N., Saracco, R., Franco-Paredes, K., Díaz-Reséndiz, F., & Rosel, M. (2023). Psychosocial factors associated with the risk of developing psychosis in a Mexican general population sample. *Frontiers in Psychiatry*, 14, Article 1095222. <https://doi.org/10.3389/fpsy.2023.1095222>
- Eckblad, M., & Chapman, L. J. (1983). Magical ideation as an indicator of schizotypy. *Journal of Consulting and Clinical Psychology*, 51(2), 215–225. <https://doi.org/10.1037/0022-006X.51.2.215>
- Eckblad, M., Chapman, L. J., Chapman, J. P., & Mishlove, M. (1982). *The Revised Social Anhedonia Scale*. Unpublished scale, University of Wisconsin, Madison.
- Fagián-Núñez, K., Torrecilla, P., Gutiérrez, V. L., Nonweiler, J., Domínguez, T., Sheinbaum, T., Kwapil, T. R., & Barrantes-Vidal, N. (2024, July 25). *Examining the psychometric properties of the Multidimensional Schizotypy Scale-Brief (MSS-B) in Spanish and Mexican samples [OSF preregistration]*. <https://osf.io/wha26>
- Fonseca-Pedrero, E., Gooding, D. C., Ortuño-Sierra, J., & Paino, M. (2016). Assessing self-reported clinical high risk symptoms in community-derived adolescents: A psychometric evaluation of the Prodromal Questionnaire-Brief. *Comprehensive Psychiatry*, 66, 201–208. <https://doi.org/10.1016/j.comppsy.2016.01.013>
- Fonseca-Pedrero, E., Paño-Piñeiro, M., Lemos-Giráldez, S., Villazón-García, U., & Muñiz, J. (2009). Validation of the schizotypal personality questionnaire—Brief form in adolescents. *Schizophrenia Research*, 111(1–3), 53–60. <https://doi.org/10.1016/j.schres.2009.03.006>
- Grant, P., & Hennig, J. (2020). Schizotypy, social stress and the emergence of psychotic-like states—A case for benign schizotypy? *Schizophrenia Research*, 216, 435–442. <https://doi.org/10.1016/j.schres.2019.10.052>
- Gross, G. M., Kwapil, T. R., Burgin, C. J., Raulin, M. L., Silvia, P. J., Kemp, K. C., & Barrantes-Vidal, N. (2018). Validation of the Multidimensional Schizotypy Scale-Brief in two large samples. *Journal of Psychopathology and Behavioral Assessment*, 40(4), 669–677. <https://doi.org/10.1007/s10862-018-9668-4>
- Gross, G. M., Kwapil, T. R., Raulin, M. L., Silvia, P. J., & Barrantes-Vidal, N. (2018). The Multidimensional Schizotypy Scale-Brief: Scale development and psychometric properties. *Psychiatry Research*, 261, 7–13. <https://doi.org/10.1016/j.psychres.2017.12.033>
- Gross, G. M., Mellin, J., Silvia, P. J., Barrantes-Vidal, N., & Kwapil, T. R. (2014). Comparing the factor structure of the Wisconsin Schizotypy Scales and the Schizotypal Personality Questionnaire. *Personality Disorders: Theory, Research, and Treatment*, 5(4), 397–405. <https://doi.org/10.1037/per0000090>
- Gross, G. M., Silvia, P. J., Barrantes-Vidal, N., & Kwapil, T. R. (2015). The dimensional structure of short forms of the Wisconsin Schizotypy Scales. *Schizophrenia Research*, 166(1–3), 80–85. <https://doi.org/10.1016/j.schres.2015.05.016>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Pearson.
- Hanssen, M., Peeters, F., Krabbendam, L., Radstake, S., Verdoux, H., & van Os, J. (2003). How psychotic are individuals with non-psychotic disorders? *Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services*, 38(3), 149–154. <https://doi.org/10.1007/s00127-003-0622-7>
- Hernández, A., Hidalgo, M. D., Hambleton, R. K., & Gómez-Benito, J. (2020). International Test Commission guidelines for test adaptation: A criterion checklist. *Psicothema*, 32(3), 390–398. <https://doi.org/10.7334/psicothema.2019.306>
- Hernández, L. M., Kemp, K. C., Barrantes-Vidal, N., & Kwapil, T. R. (2023). Disorganized schizotypy and neuroticism in daily life: Examining their overlap and differentiation. *Journal of Research in Personality*, 106, Article 104402. <https://doi.org/10.1016/j.jrp.2023.104402>
- IBM Corp. (2019). *IBM SPSS statistics for windows* (Version 26.0) [Computer software].
- Instituto Cervantes. (2023). *El español: Una lengua viva. Informe 2023*. https://cvc.cervantes.es/lengua/anuario/anuario_23/el_espanol_en_el_mundo_anuario_instituto_cervantes_2023.pdf
- Jones, S., & Miller, J. D. (2012). Psychopathic traits and externalizing behaviors: A comparison of self- and informant reports in the statistical prediction of externalizing behaviors. *Psychological Assessment*, 24(1), 255–260. <https://doi.org/10.1037/a0025264>
- Kelleher, I., Harley, M., Murtagh, A., & Cannon, M. (2011). Are screening instruments valid for psychotic-like experiences? A validation study of screening questions for psychotic-like experiences using in-depth clinical interview. *Schizophrenia Bulletin*, 37(2), 362–369. <https://doi.org/10.1093/schbul/sbp057>
- Kemp, K. C., Bathery, A. J., Barrantes-Vidal, N., & Kwapil, T. R. (2020). A brief questionnaire measure of multidimensional schizotypy predicts interview-rated symptoms and impairment. *PLOS ONE*, 15(8), Article e0237614. <https://doi.org/10.1371/journal.pone.0237614>
- Kemp, K. C., Bathery, A. J., Barrantes-Vidal, N., & Kwapil, T. R. (2021). Positive, negative, and disorganized schizotypy predict differential patterns of interview-rated schizophrenia-spectrum symptoms and impairment. *Assessment*, 28(1), 141–152. <https://doi.org/10.1177/1073191119900008>
- Kemp, K. C., Gross, G. M., Barrantes-Vidal, N., & Kwapil, T. R. (2018). Association of positive, negative, and disorganized schizotypy dimensions with affective symptoms and experiences. *Psychiatry Research*, 270, 1143–1149. <https://doi.org/10.1016/j.psychres.2018.10.031>
- Kemp, K. C., Gross, G. M., & Kwapil, T. R. (2020). Psychometric properties of the Multidimensional Schizotypy Scale and Multidimensional Schizotypy Scale-Brief: Item and scale test–retest reliability and concordance of original and brief forms. *Journal of Personality Assessment*, 102(4). <https://doi.org/10.1080/00223891.2019.1591425>
- Kemp, K. C., Kaczorowski, J. A., Burgin, C. J., Raulin, M. L., Lynam, D. R., Sleep, C., Miller, J. D., Barrantes-Vidal, N., & Kwapil, T. R. (2022). Association of multidimensional schizotypy with PID-5 domains and facets. *Journal of Personality Disorders*, 36(6), 680–700. <https://doi.org/10.1521/pedi.2022.36.6.680>
- Kemp, K. C., Raulin, M. L., Burgin, C. J., Barrantes-Vidal, N., & Kwapil, T. R. (2022). Associations of multiple measures of openness to experience

- with a brief questionnaire of positive, negative, and disorganized schizotypy. *Journal of Individual Differences*, 43(1), 1–9. <https://doi.org/10.1027/1614-0001/a000348>
- Kemp, K. C., Sperry, S. H., Hernández, L., Barrantes-Vidal, N., & Kwapil, T. R. (2023). Affective dynamics in daily life are differentially expressed in positive, negative, and disorganized schizotypy. *Journal of Psychopathology and Clinical Science*, 132(1), 110–121. <https://doi.org/10.1037/abn0000799>
- Kemp, K. C., Sperry, S. H., Hernández, L., Barrantes-Vidal, N., & Kwapil, T. R. (2024). Association of positive, negative, and disorganized schizotypy with the temporal dynamics of schizotypic experiences in daily life. *Schizophrenia Bulletin*, 51(3), 765–779. <https://doi.org/10.1093/schbul/sbae112>
- Kendler, K. S., Ochs, A. L., Gorman, A. M., Hewitt, J. K., Ross, D. E., & Mirsky, A. F. (1991). The structure of schizotypy: A pilot multitrait twin study. *Psychiatry Research*, 36(1), 19–36. [https://doi.org/10.1016/0165-1781\(91\)90114-5](https://doi.org/10.1016/0165-1781(91)90114-5)
- Kerns, J. G. (2006). Schizotypy facets, cognitive control, and emotion. *Journal of Abnormal Psychology*, 115(3), 418–427. <https://doi.org/10.1037/0021-843X.115.3.418>
- Kline, E., Wilson, C., Ereshesky, S., Nugent, K. L., Pitts, S., Reeves, G., & Schiffman, J. (2012). Schizotypy, psychotic-like experiences and distress: An interaction model. *Psychiatry Research*, 200(2–3), 647–651. <https://doi.org/10.1016/j.psychres.2012.07.047>
- Kline, P. (1994). *An easy guide to factor analysis*. Routledge. <https://doi.org/10.4324/9781315788135>
- Koran, J. (2020). Indicators per factor in confirmatory factor analysis: More is not always better. *Structural Equation Modeling*, 27(5), 765–772. <https://doi.org/10.1080/10705511.2019.1706527>
- Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological Medicine*, 42(9), 1879–1890. <https://doi.org/10.1017/S0033291711002674>
- Kwapil, T. R. (1998). Social anhedonia as a predictor of the development of schizophrenia-spectrum disorders. *Journal of Abnormal Psychology*, 107(4), 558–565. <https://doi.org/10.1037/0021-843X.107.4.558>
- Kwapil, T. R., & Barrantes-Vidal, N. (2015). Schizotypy: Looking back and moving forward. *Schizophrenia Bulletin*, 41(Suppl. 2), S366–S373. <https://doi.org/10.1093/schbul/sbu186>
- Kwapil, T. R., Barrantes-Vidal, N., & Silvia, P. J. (2008). The dimensional structure of the Wisconsin Schizotypy Scales: Factor identification and construct validity. *Schizophrenia Bulletin*, 34(3), 444–457. <https://doi.org/10.1093/schbul/sbm098>
- Kwapil, T. R., & Chun, C. A. (2015). The psychometric assessment of schizotypy. In O. Mason & G. Claridge (Eds.), *Schizotypy: New dimensions* (pp. 7–32). Routledge. <https://doi.org/10.4324/9781315858562-2>
- Kwapil, T. R., Gross, G. M., Burgin, C. J., Raulin, M. L., Silvia, P. J., & Barrantes-Vidal, N. (2018). Validity of the Multidimensional Schizotypy Scale: Associations with schizotypal traits and normal personality. *Personality Disorders: Theory, Research, and Treatment*, 9(5), 458–466. <https://doi.org/10.1037/per0000288>
- Kwapil, T. R., Gross, G. M., Silvia, P. J., Raulin, M. L., & Barrantes-Vidal, N. (2018). Development and psychometric properties of the Multidimensional Schizotypy Scale: A new measure for assessing positive, negative, and disorganized schizotypy. *Schizophrenia Research*, 193, 209–217. <https://doi.org/10.1016/j.schres.2017.07.001>
- Kwapil, T. R., Kemp, K. C., Mielock, A., Sperry, S. H., Chun, C. A., Gross, G. M., & Barrantes-Vidal, N. (2020). Association of multidimensional schizotypy with psychotic-like experiences, affect, and social functioning in daily life: Comparable findings across samples and schizotypy measures. *Journal of Abnormal Psychology*, 129(5), 492–504. <https://doi.org/10.1037/abn0000522>
- Lewine, R. R., Fogg, L., & Meltzer, H. Y. (1983). Assessment of negative and positive symptoms in schizophrenia. *Schizophrenia Bulletin*, 9(3), 368–376. <https://doi.org/10.1093/schbul/9.3.368>
- Li, L. Y., Meyer, M. S., Martin, E. A., Gross, G. M., Kwapil, T. R., & Cicero, D. C. (2020). Differential item functioning of the Multidimensional Schizotypy Scale and Multidimensional Scale-Brief across ethnicity. *Psychological Assessment*, 32(4), 383–393. <https://doi.org/10.1037/pa0000798>
- Linscott, R. J., & van Os, J. (2013). An updated and conservative systematic review and meta-analysis of epidemiological evidence on psychotic experiences in children and adults: On the pathway from proneness to persistence to dimensional expression across mental disorders. *Psychological Medicine*, 43(6), 1133–1149. <https://doi.org/10.1017/S0033291712001626>
- Lobato, L., Bethony, J. M., Pereira, F. B., Grahek, S. L., Diemert, D., & Gazzinelli, M. F. (2014). Impact of gender on the decision to participate in a clinical trial: A cross-sectional study. *BMC Public Health*, 14(1), Article 1156. <https://doi.org/10.1186/1471-2458-14-1156>
- Loewy, R. L., Pearson, R., Vinogradov, S., Bearden, C. E., & Cannon, T. D. (2011). Psychosis risk screening with the Prodromal Questionnaire—Brief version (PQ-B). *Schizophrenia Research*, 129(1), 42–46. <https://doi.org/10.1016/j.schres.2011.03.029>
- Maniaci, M. R., & Rogge, R. D. (2014). Caring about carelessness: Participant inattention and its effects on research. *Journal of Research in Personality*, 48, 61–83. <https://doi.org/10.1016/j.jrp.2013.09.008>
- McAdams, D. P. (1992). The five-factor model in personality: A critical appraisal. *Journal of Personality*, 60(2), 329–361. <https://doi.org/10.1111/j.1467-6494.1992.tb00976.x>
- McCrae, R. R. (2020). The five-factor model of personality: Consensus and controversy. In P. J. Corr & G. Matthews (Eds.), *The Cambridge handbook of personality psychology* (pp. 129–141). Cambridge University Press.
- McCrae, R. R., & Costa, P. T. (2010). *NEO inventories for the NEO personality inventory-3, NEO-PI-3, NEO five-factor inventory-3, NEO-FFI-3 professional manual*. PAR.
- Muthén, L. K., & Muthén, B. O. (2017). *Mplus: Statistical analysis with latent variables: User's guide (Version 8)*.
- Pavlov, G., Maydeu-Olivares, A., & Shi, D. (2021). Using the standardized root mean squared residual (SRMR) to assess exact fit in structural equation models. *Educational and Psychological Measurement*, 81(1), 110–130. <https://doi.org/10.1177/0013164420926231>
- Pfarr, J. K., Meller, T., Evermann, U., Sahakyan, L., Kwapil, T. R., & Nenadić, I. (2023). Trait schizotypy and the psychosis prodrome: Current standard assessment of extended psychosis spectrum phenotypes. *Schizophrenia Research*, 254, 208–217. <https://doi.org/10.1016/j.schres.2023.03.004>
- Pope, C. A., & Kwapil, T. R. (2000). Dissociative experience in hypothetically psychosis-prone college students. *Journal of Nervous and Mental Disease*, 188(8), 530–536. <https://doi.org/10.1097/00005053-200008000-00009>
- Qualtrics. (2020). *Qualtrics* [Computer software]. <https://www.qualtrics.com>
- Raine, A. (1991). The SPQ: A scale for the assessment of schizotypal personality based on DSM-III-R criteria. *Schizophrenia Bulletin*, 17(4), 555–564. <https://doi.org/10.1093/schbul/17.4.555>
- Raine, A. (2006). Schizotypal personality: Neurodevelopmental and psychosocial trajectories. *Annual Review of Clinical Psychology*, 2(1), 291–326. <https://doi.org/10.1146/annurev.clinpsy.2.022305.095318>
- Raine, A., & Benishay, D. (1995). The SPQ-B: A brief screening instrument for schizotypal personality disorder. *Journal of Personality Disorders*, 9(4), 346–355. <https://doi.org/10.1521/pedi.1995.9.4.346>
- Rónai, L., Hann, F., Kéri, S., & Polner, B. (2025). Thoughts Falling Apart: Disorganized Schizotypy Specifically Predicts Both Psychotic- and Stress-Reactivity in Daily Life. *Journal of Personality. Advance online publication*. <https://doi.org/10.1111/jopy.13019>
- Ros-Morente, A., Rodríguez-Hansen, G., Vilagrà-Ruiz, R., Kwapil, T. R., & Barrantes-Vidal, N. (2010). Adaptation of the Wisconsin scales of psychosis proneness to Spanish. *Actas Españolas de Psiquiatría*, 38(1), 33–41. <https://actaspsiquiatria.es/index.php/actas/article/view/771>
- Sahakyan, L., Kwapil, T. R., Lo, Y., & Jiang, L. (2019). Examination of relational memory in multidimensional schizotypy. *Schizophrenia Research*, 211, 36–43. <https://doi.org/10.1016/j.schres.2019.07.031>

- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99(6), 323–338. <https://doi.org/10.3200/JOER.99.6.323-338>
- Schultze-Lutter, F., Renner, F., Paruch, J., Jolkowski, D., Klosterkötter, J., & Ruhrmann, S. (2014). Self-reported psychotic-like experiences are a poor estimate of clinician-rated attenuated and frank delusions and hallucinations. *Psychopathology*, 47(3), 194–201. <https://doi.org/10.1159/000355554>
- Stefanis, N. C., Hanssen, M., Smiris, N. K., Avramopoulos, D. A., Evdokimidis, I. K., Stefanis, C. N., Verdoux, H., & Van Os, J. (2002). Evidence that three dimensions of psychosis have a distribution in the general population. *Psychological Medicine*, 32(2), 347–358. <https://doi.org/10.1017/S0033291701005141>
- Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38(1), 1–10. <https://doi.org/10.1007/BF02291170>
- van Os, J., & Linscott, R. J. (2012). Introduction: The extended psychosis phenotype—Relationship with schizophrenia and with ultrahigh risk status for psychosis. *Schizophrenia Bulletin*, 38(2), 227–230. <https://doi.org/10.1093/schbul/sbr188>
- Vollema, M. G., & van den Bosch, R. J. (1995). The multidimensionality of schizotypy. *Schizophrenia Bulletin*, 21(1), 19–31. <https://doi.org/10.1093/schbul/21.1.19>
- Waszczuk, M. A., Jonas, K. G., Bornovalova, M., Breen, G., Bulik, C. M., Docherty, A. R., Eley, T. C., Hettema, J. M., Kotov, R., Krueger, R. F., Lencz, T., Li, J. J., Vassos, E., & Waldman, I. D. (2023). Dimensional and transdiagnostic phenotypes in psychiatric genome-wide association studies. *Molecular Psychiatry*, 28(12), 4943–4953. <https://doi.org/10.1038/s41380-023-02142-8>
- Wiggins, B. J., & Christopherson, C. D. (2019). The replication crisis in psychology: An overview for theoretical and philosophical psychology. *Journal of Theoretical and Philosophical Psychology*, 39(4), 202–217. <https://doi.org/10.1037/teo0000137>
- Winterstein, B. P., Silvia, P. J., Kwapil, T. R., Kaufman, J. C., Reiter-Palmon, R., & Wigert, B. (2011). Brief assessment of schizotypy: Developing short forms of the Wisconsin Schizotypy Scales. *Personality and Individual Differences*, 51(8), 920–924. <https://doi.org/10.1016/j.paid.2011.07.027>
- Wuthrich, V. M., & Bates, T. C. (2006). Confirmatory factor analysis of the three-factor structure of the schizotypal personality questionnaire and Chapman schizotypy scales. *Journal of Personality Assessment*, 87(3), 292–304. https://doi.org/10.1207/s15327752jpa8703_10

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